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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,570	02/24/2000	Edward W. Conrad	(BU999-152)	5806

7590 07/03/2003

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EXAMINER

LU, TOM Y

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/512,570

Applicant(s)

CONRAD ET AL.

Examiner

Tom Y Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-7,9-12 and 14-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9-12 and 14-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment and written response filed on April 2, 2003 has been entered.
2. Claims 3, 8 and 13 have been cancelled.
3. Claims 16-21 have been added.
4. Claims 1-2, 4-7, 9-12 and 14-21 are now pending.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 6 and 11 have been considered but are moot in view of the new ground(s) of rejection.

The Aoyama Reference:

Applicant argues Aoyama does not disclose the limitation of “the intensity vs. pixel information is selected in plurality of different directions, through substantially the same point, in the vicinity of the edge of the image shape” as cited in independent claims 1, 6 and 11. This feature of the invention is utility because it helps track an edge that may change directions suddenly and significantly. In summary, applicant argues Aoyama does not anticipate this feature.

Upon further review of the specification, and in light of applicant's arguments, the examiner agrees Aoyama does not teach the feature of “selecting intensity vs. pixel information in a plurality of different directions, *though substantially the same point*, in the vicinity of an edge of the image shape”. Nonetheless, “intensity vs. pixel information” can be interpreted as any feature process involves with pixel intensity, brightness, contrast or luminance. As a result,

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such feature process becomes well known in the art, such as Sobel, Laplacian process or alike.

Accordingly, new references have been cited and new grounds of rejection have been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 4-7, 9-12, 14-15, 17, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakano et al (U.S. Patent No. 5,487,116).

- a. Referring to Claim 1, Nakano discloses selecting intensity vs. pixel information in a plurality of different directions, through substantially the same point, in the vicinity of an edge of the image shape (Nakano at column 7, lines 64-67, column 8, lines 1-3, discloses using Active Contour Models technique to extract the contour of a preceding vehicle. The dynamic contour model is a technique by which an energy function Esnakes is defined from the characteristic of an image and the shape of a model, and in the process of minimizing the energy function, the contour of an object is extracted. At column 8, lines 19-20, Nakano teaches the image energy Eimage as a potential field from edges in an image is calculated as a density gradient on the image, which corresponds to the limitation of “selecting intensity vs. pixel information”. Nakano at column 8, lines 46-47, discloses the Esnakes calculated at the step 3603 is compared with the energy of the adjacent pixels, the processing is repeated for each adjacent region previously

set. By comparing with each of the adjacent pixels, the limitation of “plurality of directions” is satisfied. Note, all the pixels as shown in figure 21 are in the vicinity of an edge of the image shape); recognizing scans with sufficient contrast as containing edge information (comparing energy with adjacent pixels is a recognizing process. And the energy herein as mention at column 8, line 20, is a density gradient on the image which is the contrast information of the edge pixels); subjecting acceptable scans to an edge detection algorithm (Nakano at column 8, lines 56-61, discloses after comparing with all the adjacent pixels, the final node is obtained. The comparing process corresponds to the claimed “scan” process herein. And such process is a part of Active Contour Models technique, which is a edge detecting algorithm); detecting the edge location of the image by using said edge detection algorithm (Nakano discloses using Active Contour Models technique as the claimed “edge detection algorithm”); and generating a locus of points that define the two-dimensional shape of the image from the detected edge values (Nakano at column 8, lines 66-67, discloses the Esnakes process is repeated for each node as shown in figure 21 to obtain the contour of the vehicle. The final nodes obtained after Esnakes processing are the claimed “points”).

- b. With regarding to Claim 6, all the limitations are addressed in Claim 1.
- c. As applied to Claim 7, which is representative of Claim 2, Nakano discloses wherein the edge detection algorithm is a user defined edge detection algorithm that is tailored to the application (the Active Contour Models technique is defined

the user. Although, Nakano at column 9, lines 64-67, discloses Sobel filter and Laplacian are also suitable for extracting the edges).

- d. As applied to Claim 9, which is representative of Claim 4, Nakano discloses wherein the plurality of directions includes at least four scans (Nakano in figure 21 shows 8 directions).
- e. As applied to Claim 10, which is representative of Claim 5, Nakano discloses wherein one of said direction is normal to an approximate edge location (Nakano in figure 21 shows at least one the direction is normal to an approximate edge location).
- f. As applied to Claim 19, which is representative of Claim 17, Nakano discloses wherein the plurality of directions are angularly spaced apart about 45 degrees (Nakano in figure 21 shows the directions are angularly spaced apart about 45 degrees).
- g. With regarding to Claim 11, the only difference between Claim 11 and Claim 1 is Claim 11 calls for additional limitation of a program storage device, Nakano at column 3, line 44 discloses a program is stored on a ROM.
- h. With regarding to Claim 12, the limitation is addressed in Claim 7.
- i. With regarding to Claim 14, the limitation is addressed in Claim 9.
- j. With regarding to Claim 15, the limitation is addressed in Claim 10.
- k. With regarding to Claim 21, the limitation is addressed in Claim 19.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 16, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano. All the arguments and applicability in paragraph are incorporated herein.

- a. As applied to Claim 18, which is the representative of Claim 16, Nakano discloses the directions are angularly spaced apart about 45 degrees as shown in figure 21. Although, Nakano does not disclose wherein the plurality of directions are angularly spaced apart about $22\frac{1}{2}$ degrees, it would have been obvious to a person of ordinary skill in the art to perform Esnakes energy function in 5x5 matrix instead of 3x3 matrix because within 5x5 matrix the spacing between the directions will be $22\frac{1}{2}$ degrees.
- b. With regarding to Claim 20, the limitation is addressed in Claim 18.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Nagao et al, U.S. Patent No. 5,491,759, discloses document edge detection apparatus. See column 2, lines 1-54.

b. Tsuboi et al, U.S. Patent No. 5,825,914, discloses Component detection method.

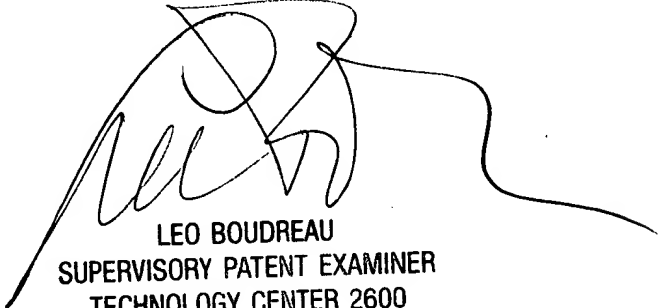
See figures 18 and 19

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Y Lu whose telephone number is (703) 306-4057. The examiner can normally be reached on 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on (703) 305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Tom Y. Lu
June 16, 2003



LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600